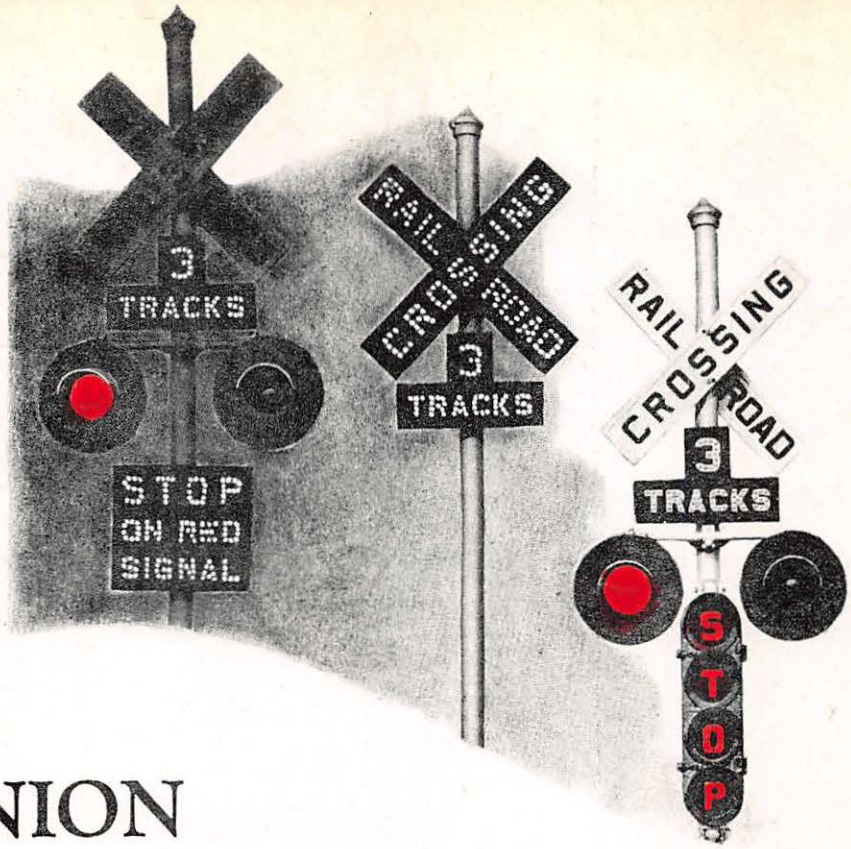


UNION
FLASHING LIGHT SIGNALS

complying with

Latest Recommendations

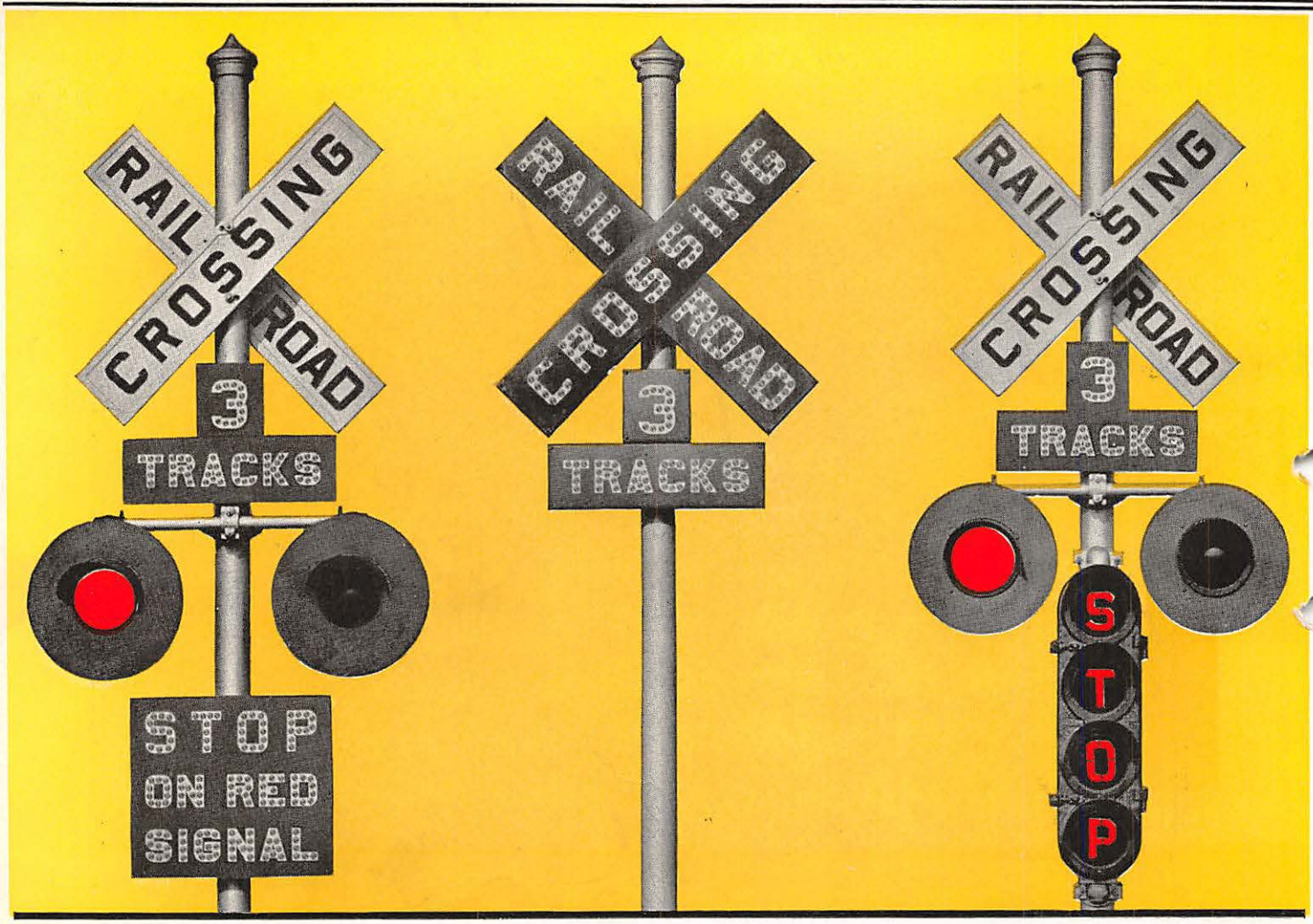
JUNE 18, 1934

U.D. 171

Union Switch & Signal Co.

SWISSVALE, PA.

Rotoprinted IN U.S.A.



Above: 90 deg. double-face Cast Iron Crossing Sign with reflector "3 Tracks" Track Sign and reflector "Stop on Red Signal" Sign.

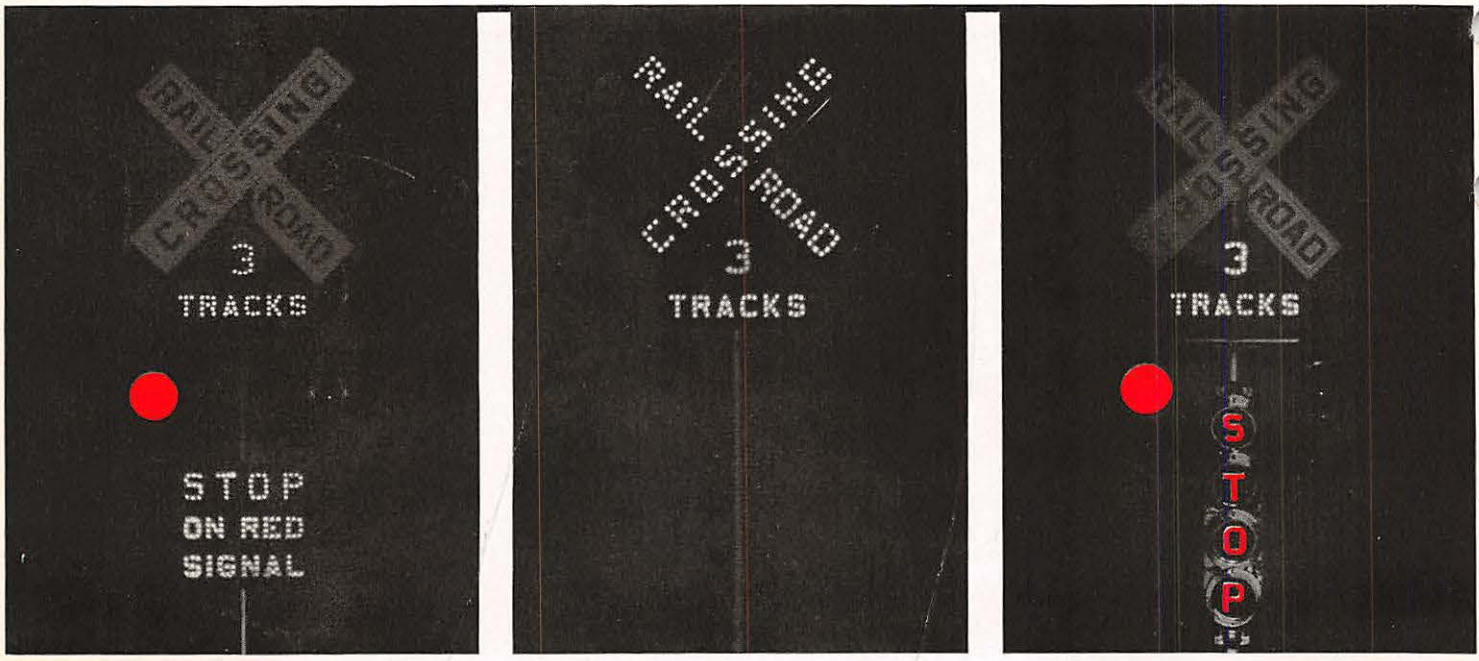
Below: As they appear to a motorist at night.

Above: 90 deg. Reflector Crossing Sign with reflector "3 Tracks" Sign.

Below: How these signs appear to a motorist at night.

Above: 90 deg. Cast Iron Crossing Sign with reflector "3 Tracks" Sign and illuminated "STOP" Sign.

Below: How these signs appear to a motorist at night.



Union Switch & Signal Co.
SWISSVALE, PA.
R-165

Subject: Union Flashing Light Signals
(Latest Recommendations)

Union Development
Number: 171
Date: June 18, 1934
Sheets

The Joint Committee on Grade Crossing Protection of the American Railway Association have adopted recommended standards for Railroad Highway Crossing Protection as set forth in their Bulletin #1. The Signal Section, A.R.A. recommendations are printed as Part 148 of their Manual and they have also included therein, Specifications 15533 and 15633 covering detail features of Reflector Button Signs, as well as standard drawings 1640A to 1650A inclusive, covering all details.

These recommendations and specifications have in most cases received the approval of Federal, State and Local Authorities.

Where necessary, Union designs have been modified and augmented so that, as requirements now stand, a complete line of Union signals, signs and controlling devices, in strict accord with A.R.A. Specifications, are available for the needs of Highway Crossing Protection. This publication deals only with the designs of Flashing Light Signals and Signs.

Combinations:

The more usual combinations of Union Highway Crossing Signals are shown in Figs. 1, 2 and 3 and in the color frontispiece. The combination required depends upon the importance of the crossing;

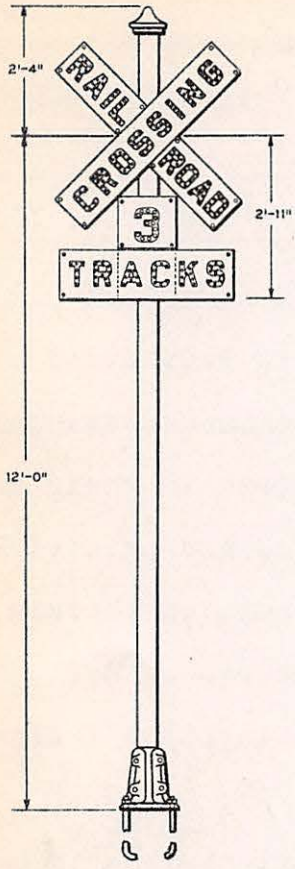


Fig. 1..For Crossings having very light traffic.

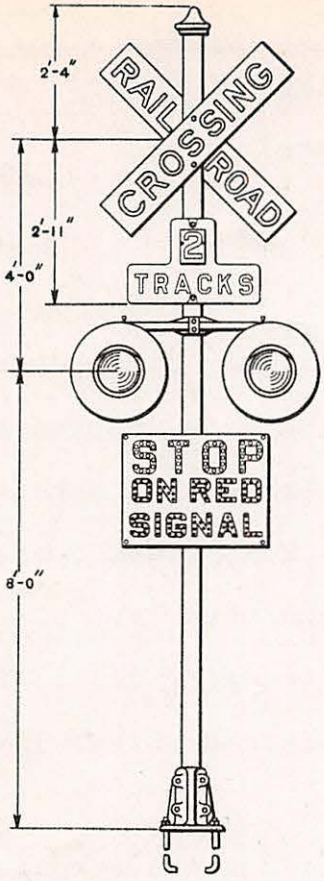


Fig. 2.....For the average crossing.

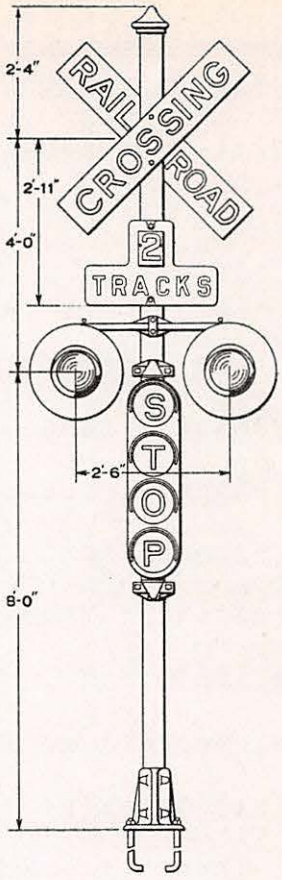


Fig. 3.....For the very busy crossing.

Fig. 1.....Crossbuck and track signs may (optionally) be supplied in either cast iron or reflector button types.

Fig. 2.....Flashing light signal with backlight. "STOP ON RED SIGNAL" sign with reflector buttons for the letters. Crossbuck and track signs may (optionally) be supplied in either cast iron or reflector button types.

Fig. 3.....Flashing light signal with backlight. Illuminated "STOP" signal to be lighted while signal is flashing. Crossbuck and track signs may (optionally) be supplied in either cast iron or reflector button types.

however, variation in some parts are optional as indicated in the descriptive titles. The illustrations shown, by no means constitute all of the combinations required in service. Additional lamp units may be assembled to the posts and aligned to provide the proper approach aspects where more than one road or street converge at the crossing. An example of this is shown in Fig. 5.

Flashing Light Units:

Style "HC-8" Signals (described in U.D.#181) comply fully with A.R.A. recommendations, in that they are equipped with backlights which provide suitable rear view aspects for most locations.

For those cases where the backlight indication must be of the same intensity as the indication from the front, we recommend the use of our Style HC-51 units, placed back to back. This arrangement is often necessary where large trucks are allowed to park in such a manner as to obscure the front indication of the signal located on the near side of the railway crossing. The Style HC-51 Flashing Light Unit is the same in all respects as the HC-5 Unit except that it is fitted with a 30° "Spreadlight" glass as used in the HC-8 unit.

Fig. 4.....Style HC-8 Flashing Light Signal, rear view of the combination shown in Fig. 2.

Signs:

In developing the latest "Union" Highway Crossing Signs, our Engineers have conscientiously cooperated with the spirit and physical intent of the A.R.A. Specifications, with the result that all requirements are met by designs incorporating the following broad advantages:

(a) Minimum number of designs commensurate with all practical requirements - To encourage Standardization throughout the land.

(b) Use of such materials and processing methods as to insure rugged construction and attendant long life with minimum expense for upkeep.

(c) Attractive and uniform indications which compel attention.

(d) Use of such wording that the purpose may be instantly recognized.

(e) Provision for interchangeability of parts, and convenience when necessary to repaint.

Reflector Buttons:

"Union" lens type reflector buttons used in these signs depend for their illumination upon light from an external source such as light from an automobile headlight. This light is reflected back in the direction of the source, that is, the reflected beam is substantially parallel to and coincides with the incoming beam. The buttons are efficient within an angle of 30° from the normal.

The buttons are focused for sign work and when illuminated by automobile headlights, are uniformly and brightly legible to the driver of the automobile producing the illumination, within the normal range of 300 Ft. Beyond this distance the luminous indication is still strong and compels the motorist's attention. The

assembly consists of a ground and polished lens, and a silvered reflector hermetically sealed in an aluminum housing. The buttons are held in place in an intermediate plate by means of "retainers" located in punched holes that register with the punched holes in the front plate. The retainers carry springs at the bottom, which, within certain limits defined by the construction of the retainer, assure that the lens shoulders press against the front plate of the sign. The metal parts used in the button assembly are made of non-corrodible material and the retainers are specially treated for rust prevention. There are two sizes of buttons (viz. 0.586" and

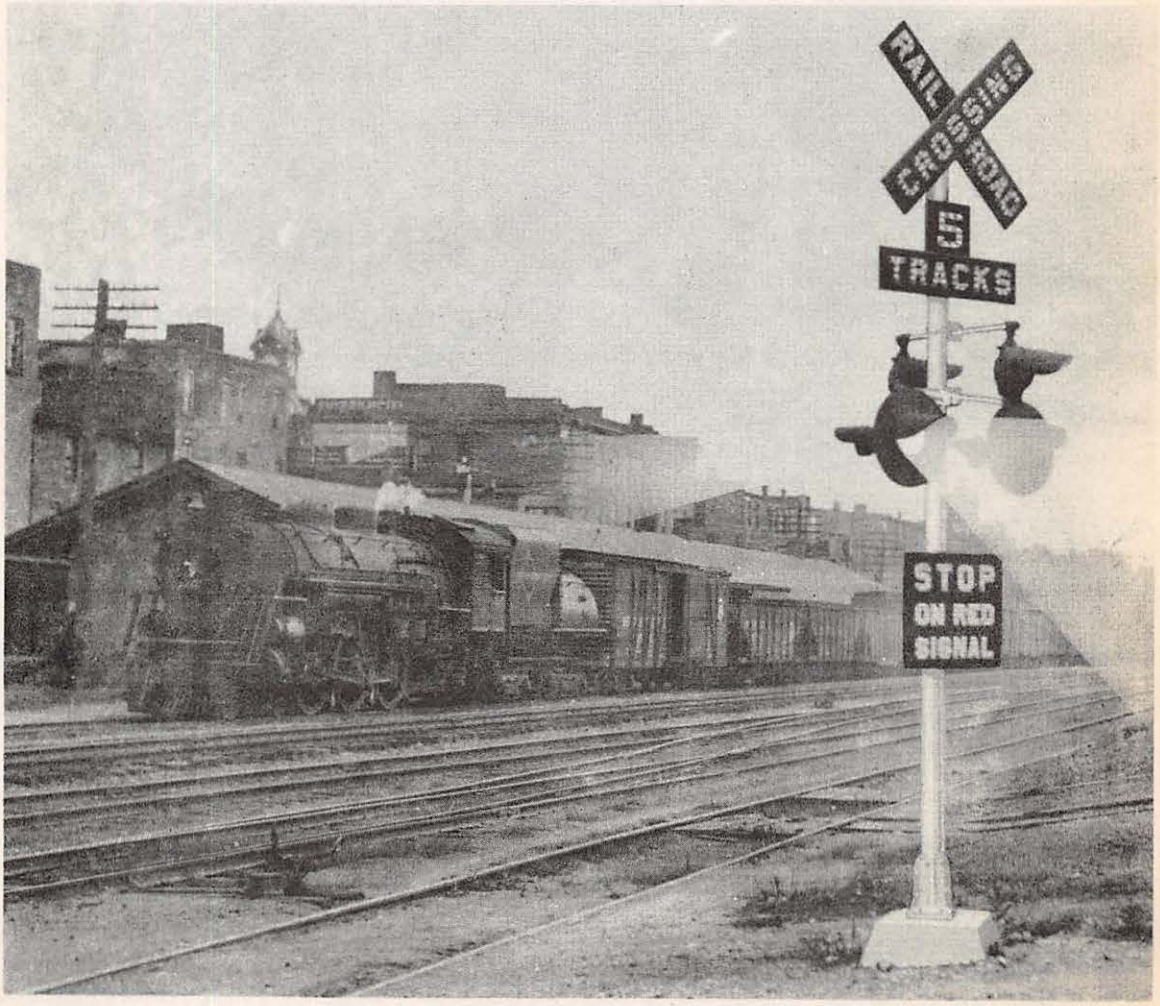


Fig. 5.....Highway Crossing Protection for converging streets;
Style HC-5 Units above; Style HC-8 Units below.

Fig. 6.....Exploded View of Sign showing front, intermediate and rear plates and manner of assembling buttons in intermediate plate.

0.410" exposed dia. of lens). The marker sign uses a yellow lens while the other signs employ clear lenses.

Case:

The case or housing in which the reflector buttons are assembled consists of a front, intermediate and back plate, in all cases made from #16 gauge copper bearing, special galvanized, sheet steel. This material provides for very rugged construction and the

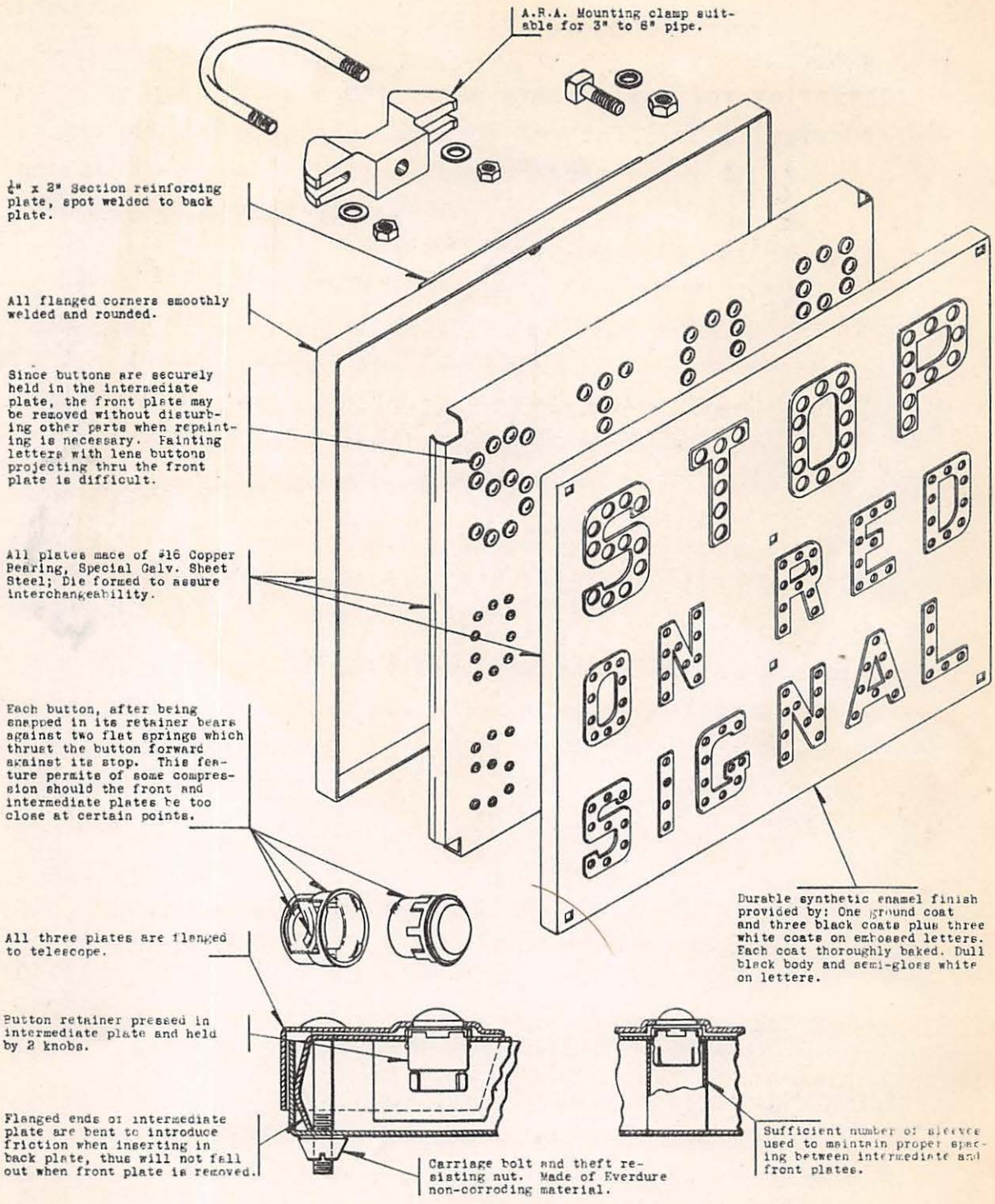

A.R.A. Mounting clamp suitable for 3" to 8" pipe.
½" x 3" Section reinforcing plate, spot welded to back plate.
All flanged corners smoothly welded and rounded.
Since buttons are securely held in the intermediate plate, the front plate may be removed without disturbing other parts when repainting is necessary. Painting letters with lens buttons projecting thru the front plate is difficult.
All plates made of #16 Copper Bearing, Special Galv. Sheet Steel; Die formed to assure interchangeability.
Each button, after being snapped in its retainer bears against two flat springs which thrust the button forward against its stop. This feature permits of some compression should the front and intermediate plates be too close at certain points.
All three plates are flanged to telescope.
Button retainer pressed in intermediate plate and held by 2 knobs.
Flanged ends of intermediate plate are bent to introduce friction when inserting in back plate, thus will not fall out when front plate is removed.
STOP ON RED SIGNAL
Durable synthetic enamel finish provided by: One ground coat and three black coats plus three white coats on embossed letters. Each coat thoroughly baked. Dull black body and semi-gloss white on letters.
Carriage bolt and theft resisting nut. Made of Everdure non-corroding material.
Sufficient number of sleeves used to maintain proper spacing between intermediate and front plates.

FIG. 6A.....EXPLODED VIEW OF UNION "STOP ON RED SIGNAL" REFLECTOR BUTTON SIGN SHOWING SOME IMPORTANT FEATURES OF DESIGN.

highest degree of protection against corrosion. Each plate is die-formed, permitting interchange or replacement of parts for respective signs, on the ground. All plates have flanged rims which telescope, thus providing maximum rigidity and a high degree of weatherproofing. The reflector button retainers, being pressed into holes in the intermediate plate which coincide with the holes punched in the front plate, assures that front plates can be interchanged for painting without disturbing the buttons and that all reflector button lenses will remain in proper alignment. Where signs include letters or numerals, the front plates are suitably embossed.

Assembly:

In assembling sign plates, at least two theft resisting bolts having special nuts are used. All bolts are made of high tensile strength phosphor bronze. Spacer tubes are placed at intervals around the rear of the retainers in the intermediate plate, between the intermediate and back plates so that they, as well as the flanged rim of the intermediate plate, assure that the shoulders of the reflector buttons fit with uniform pressure against the rims of the holes in the front plate.

Figure 6 shows an exploded view of our "Stop-on-red" Signal Reflector Button Sign and is illustrative of the manner of assembly of Union signs of this type.

Mounting:

Mounting clamps suitable for fastening the Sign to 3 in. to 6 in. pipe posts are fastened to the back plate in such a manner

Fig. 7

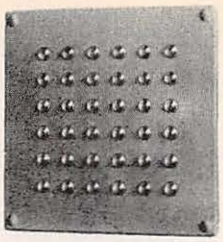


Fig. 10

A.R.A.
Reflector Button
Signs.

Fig. 8

Fig. 9

that it is not necessary to disassemble the sign when mounting, except in the case of the cross-buck sign which for convenience is shipped in two parts. The clamps are of the A.R.A. design and it is possible to attach them to square wooden posts by using thru-bolts instead of U-bolts. The small marker signs use only one clamping bracket but an angle iron is welded to the rear plate so

that it locks the clamp and thus prevents the signal from turning on its axis of support. This angle iron also serves to stiffen the sign. In the case of signs having two supporting brackets, the back plates are reenforced by welding a 1/4" strap across the back at the points of support.

Types:

There are at present four Union reflector button signs approved by the A.R.A., details of which are provided in the following tabulation:

TABLE I

Fig.	Legend (embossed)	Letter or Numeral		Size of panels	Reflector Buttons		A.R.A. Dwg.
		High	Stroke		Diam. Lens exposed	Quan.	
7	RAIL ROAD CROSSING	5½"	15/16"	4' x 9"	0.586" (#3)	80 89	1642A
8	---(numeral) TRACKS	5½" 4"	15/16" 11/16"	8½" x 9" 8" x 27¼"	0.586" (#3) 0.410" (#5)	* 51	1645A
9	STOP ON RED SIGNAL	5½"	15/16"	25½" x 22½"	0.586" (#3) 0.410" (#5)	41 96	1646A
10	none (marker)	none		11" x 11"	0.586" (#3)	36	1649A

* Numerals require different quantities of buttons as follows:

Numeral	2	3	4	5	6	7	8	9
Quantity	11	12	10	12	13	7	14	13

Note: Figures 7, 8 and 9 Signs listed in the above tabulation use crystal (clear) lenses in the reflector buttons; Fig.10 uses yellow lenses.

We also make a special 5-3/8" Square Sign with circular arrangement of nineteen #3 reflector buttons for mounting on Crossing Gates. Red lenses are used in the buttons. Other types have been furnished as markers to replace lamps on semaphore signals, as grade signal markers, etc.

We also show illustrations in the colored frontispiece of our Style HC-42 Illuminated Stop Sign and cast-iron Cross-Buck Sign, both of which are specified by the A.R.A. for certain types of installations.

Ordering Instructions:

Until such time as the signs shown are properly cataloged, orders should refer to the figure number as shown in Table I. Flashing Light Signal Assemblies and parts are shown in our catalog, Section K.

H. H. Cadwallader
6/19/34